

REMARKS

With this Amendment, Applicant adds new claims 14-21. No new matter is added. Therefore, claims 1-12 and 14-21 are all the claims currently pending in the present application.

I. Formal Matters

Applicant thanks the Examiner for acknowledging the claim to foreign priority and for confirming that the certified copy of the priority document was received.

Applicant thanks the Examiner for acknowledging receipt of the Information Disclosure Statements filed January 24, 2002, June 24, 2004 and for considering the references cited therein.

Applicant respectfully requests the Examiner to indicated whether the drawings filed January 24, 2002 are approved in the next communication.

II. Rejection under the Judicially created Doctrine of Double Patenting

Claims 1-6 stand rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claim 13 of Kubo et al. (U.S. Patent No. 6,597,456; hereinafter “Kubo”) in view of Natsuume et al. (Natsuume et al., A New High Heat Resistant, High Clarity, And High Humidity Resistant Polymer For Optical Uses, **Materials Research Society Symposium Proceedings**, Materials Research Society, Pittsburg, PA, U.S. vol. 150, April 25, 1989, pages 245-250, XP009007850; “hereinafter Natsuume”).

Applicant traverses the obviousness-type double patenting rejection and submits that claims 1-6 are not obvious over claim 13 of Kubo in view of Natsuume, either alone or in combination.

In rejecting claim 1, the Examiner concedes that claim 13 of Kubo does not recite “that the dielectric block is composed of a synthetic resin,” as required by claim 1 of the present application. (*See* page 3 of the Office Action). However, the Examiner alleges that Natsuume makes up for the deficiencies of Kubo. Specifically, the Examiner alleges that “[i]t would have been obvious to one of ordinary skill in the art to use the polyolefin polymer” taught by Natsuume “in the dielectric block of [Kubo] because the polyolefin polymer ... provides the advantage of high transmittance properties.” (*See* page 4 of the Office Action). Additionally, the Examiner posits that since the dielectric block recited in claim 13 of Kubo, as modified by Natsuume, “is composed of the same properties as the instantly claimed dielectric block, it will possess the same properties, i.e. the intensities of s-polarized component is 50% or less (30% or less and 10% or less).” (*See* page 4 of the Office Action). Contrary to the Examiner’s assertion, Applicant submits that Natsuume fails to teach, suggest, or provide the motivation for the proposed modification mentioned above.

To be precise, Natsuume relates generally to the physical properties of a “polyolefin polymer, [called] Zeonex” which has characteristics that are “most suitable for uses in ... over-write magneto optical disk [substrates].” (*See* Natsuume at page 250).¹ In describing the benefits of using the polyolefin polymer (Zeonex) as an optical disk substrate, Natsuume compares the “composition, physical and molding properties of the polymer, and disk properties

¹ *See also* pages 245 & 248 of Natsuume explaining that “polyolefin polymer, Zeonex exhibits excellent properties for optical disk substrates.”

made from it ... with those of [polymethylmethacrylate (PMMA)] and polycarbonate.” (*See* Natsuume at page 245).

Despite the fact that Natsuume merely discloses the benefits of using Zeonex as an optical disk substrate, there is simply no disclosure in Natsuume and the Examiner cites to none suggesting the use of Zeonex as a dielectric block for surface plasmon resonance analysis. Additionally, there is no disclosure in Natsuume suggesting or teaching the effects of a light beam striking a surface of Zeonex such that *the intensity of an s-polarized component at an interface is 50% or less of the intensity of the light beam at the interface*, as required by claim 1. Accordingly, Natsuume fails to teach, suggest or provide the motivation for a surface plasmon resonance measuring chip, comprising, *inter alia*, a dielectric block, said dielectric block is formed from a synthetic resin in which, when said light beam is p-polarized outside said dielectric block and then strikes said interface, the intensity of an s-polarized component at said interface is 50% or less of the intensity of said light beam at said interface, as required by claim 1.

Applicant respectfully submits that the Examiner has not provided motivation known in the art to modify the dielectric block recited in claim 13 of Kubo in the way the Examiner contends. The only possible motivation for the Examiner’s proposed modification comes from the Applicant’s own disclosure, which constitutes impermissible hindsight reconstruction according to *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). (*See also* MPEP § 2143). Therefore, the Examiner’s rationale to combine Natsuume with claim 13 of Kubo is deficient.

For at least the above reasons, Applicant submits that claim 1 is patentably distinct over claim 13 of Kubo in view of Natsuume and the Examiner's obviousness-type double patenting rejection of claim 1 should be reconsidered and withdrawn.

Regarding claims 2-12, which depend from claim 1, Applicant submits that claims 2-12 are patentable for at least the reasons submitted for claim 1.

With further regard to claim 2, Applicant submits that this claim recites independently patentable subject matter. Specifically, claim 2 recites, a surface plasmon resonance measuring chip wherein said dielectric block is formed from a synthetic resin in which, when said light beam is p-polarized outside said dielectric block and then strikes said interface, the intensity of a s-polarized component at said interface is 30% or less of the intensity of said light beam at said interface.

In rejecting claim 2, the Examiner suggests that the substitution of polyolefin polymer, Zeonex (disclosed by Natsuume) in the dielectric block recited in claim 13 of Kubo, teaches "intensities of a s-polarized component is [30%] or less." (See page 4 of the Office Action). Similar to the discussion above with respect to claim 1, there is simply no disclosure in Natsuume suggesting or teaching the effects of a light beam striking a surface of the polyolefin polymer, Zeonex such that *the intensity of a s-polarized component at said interface is 30% or less of the intensity of the light beam at said interface*, as required by claim 2. Accordingly, the Examiner's proposed modification is deficient for reasons similar to those submitted for claim 1. Therefore, Applicant respectfully submits that claim 2 is patentably distinct over claim 13 of

Kubo in view of Natsuume. For at least the above reasons, the Examiner's obviousness-type double patenting rejection of claim 2 should be reconsidered and withdrawn.

Since claim 3 contains features similar to the features recited in claims 1 and 2, Applicant submits that claim 3 is independently patentable for reasons analogous to those submitted for claims 1 and 2. To be precise, Natsuume is simply silent regarding the matter of a light beam striking a surface of the polyolefin polymer, Zeonex such that *the intensity of a s-polarized component at said interface is 10% or less of the intensity of the light beam at said interface*, as required by claim 3. Therefore, Applicant respectfully submits that the Examiner's proposed modification is deficient and that claim 3 is patentably distinct over claim 13 of Kubo in view of Natsuume. For this additional reason, the Examiner's obviousness-type double patenting rejection of claim 3 should be reconsidered and withdrawn.

With further regard to claim 4, Applicant submits that claim 4 recites independently patentable subject matter given that Natsuume, fails to teach, suggest or provide the motivation for a surface plasmon resonance measuring chip, wherein said synthetic resin is a synthetic resin that is selected from polymethylmethacrylate, a cycloolefin polymer, or a cycloolefin copolymer, as claimed. In the Office Action, the Examiner correctly concedes that claim 13 of Kubo does not recite that the dielectric block is composed of a synthetic resin but the Examiner suggests that substituting the polyolefin polymer (Zeonex), disclosed by Natsuume, in the dielectric block recited in claim 13 of Kubo makes up for the deficiencies of Kubo. Applicant submits that the Examiner's proposed combination is deficient and does not teach all of the features of claim 4.

As noted above, the Natsuume disclosure merely relates generally to the physical characteristics of a polyolefin polymer, (Zeonex) which is desirable for use in optical disk substrates. There is no disclosure in Natsuume suggesting use of polyolefin polymer (Zeonex) in a dielectric block. Even assuming *arguendo*, that the polyolefin polymer (Zeonex) could be substituted in the dielectric block recited in claim 13 of Kubo, the Examiner has not shown how such a combination provides motivation for a dielectric block formed from a synthetic resin, wherein said synthetic resin is a synthetic resin that is selected from polymethylmethacrylate, a cycloolefin polymer, or a cycloolefin copolymer, as required by claim 4. For this additional reason, Applicant submits that claim 4 is patentably distinct over claim 13 of Kubo in view of Natsuume. Therefore, the Examiner's obviousness-type double patenting rejection of claim 4 should be reconsidered and withdrawn.

Since claims 5 and 6 contain features similar to the features recited in claim 4, Applicant submits that claims 5 and 6 are independently patentable for the reasons discussed above with respect to claim 4.

III. Rejection of Claim 1 Under 35 U.S.C. § 102(e)

Claim 1 stands rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by Naya et al. (U.S. Patent No. 6,611,367; hereinafter "Naya"). Applicant submits that claim 1 is patentable because each and every element of the claim is not disclosed or suggested by Naya. To be precise, Applicant submits that Naya fails to disclose, suggest, or otherwise teach at least a surface plasmon resonance measuring chip, comprising, *inter alia*, a dielectric block, said dielectric block is formed from a synthetic resin in which, when said light beam is p-polarized

outside said dielectric block and then strikes said interface, the intensity of an s-polarized component at said interface is 50% or less of the intensity of said light beam at said interface, as required by claim 1. In the Office Action, the Examiner relies on column 3, lines 29-60, column 4, lines 22-42, and column 5, lines 56-66 for the proposition that Naya teaches all of the features of claim 1. Quite the opposite, neither the cited portion, nor any other portion of Naya discloses or suggests all of the features of claim 1. Applicant submits that the Examiner has also failed to demonstrate how the polycarbonate of Naya would necessarily include the relative polarization characteristics as claimed.

Instead, Naya relates generally to “a surface plasmon optical modulator element which modulates light on the basis of generation of surface plasmon.” Col. 1, lines 7-9. According to the disclosure of Naya, a dielectric material block (11) is arranged so that light-to-be modulated (10) travels through the interior of a dielectric material block (11) and impinges upon a surface (11a) of the dielectric material block (11) at an angle of total reflection. (*See* Col. 127, lines 63-67; Col. 128, line 1 & Figure 1 of Naya). The light-to-be modulated (10) which passes through the interior of the dielectric material block (11) is turned on and off in response to modulating light (14) which is projected onto photo-functional film (13). Col. 128, lines 63-67.

In rejecting claim 1, the Examiner seems to rely on column 4, lines 22-25 as teaching the claim limitation “when said light beam is p-polarized outside said dielectric block and then strikes said interface, the intensity of an s-polarized component at said interface is 50% or less of the intensity of said light beam at said interface,” as required by claim 1. However, column 4, lines 22-25 only provides that the light-to-be modulated (10) is linearly polarized light and the

dielectric material block (11) is positioned such that the light to be modulated (10) impinges upon the surface (11a) in the form of p-polarized light. Nowhere in the cited portion or any other portion of Naya is there any disclosure relating to intensity of an s-polarized component at an interface. As such, there is simply no disclosure in Naya suggesting a surface plasmon resonance measuring chip, comprising, *inter alia*, a dielectric block, said dielectric block is formed from a synthetic resin in which, when said light beam is p-polarized outside said dielectric block and then strikes said interface, the intensity of an s-polarized component at said interface is 50% or less of the intensity of said light beam at said interface, as required by claim 1.

Since Naya does not disclose, teach or otherwise suggest all of the limitations of claim 1, Applicant respectfully requests the Examiner to reconsider and withdraw the § 102(e) rejection of claim 1.

IV. Rejection of Claims 1-12 Under 35 U.S.C. § 103(a) over Batchelder in view of Natsuume

Claims 1-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Batchelder et al. (U.S. Patent No. 4,844,613; hereinafter “Batchelder”) in view of Natsuume. Applicant submits that claim 1 is patentable because Batchelder, Natsuume or a combination thereof fails to teach, suggest, or provide the motivation for all of the features recited in claim 1. In the Office Action, the Examiner seems to rely on column 2, lines 18-64 and Figure 1 of Batchelder along with pages 245 and 250 of Natsuume for the proposition that claim 1 is unpatentable over the combination of Batchelder and Natsuume. (*See* pages 5 and 6 of the Office Action). Particularly, the Examiner appears to suggest that it would have been obvious to

a skilled artisan to substitute the polyolefin polymer material (Zeonex) taught by Natsuume for the glass in the prism (11) disclosed by Batchelder and that this proposed combination teaches all of the features of claim 1. Applicant submits that the proposed combination is improper for the following reasons.

First, the optical sensor device taught by Batchelder does not overcome problems demonstrated by conventional devices such as the surface plasmon resonance measuring apparatus employing the “Kretschmann configuration” disclosed in Japanese Unexamined Patent Publication No. 6(1994)-167443). (See page 1, lines 20-23 of the specification). To be precise, conventional surface plasmon resonance measuring apparatuses exhibit a gap between a first dielectric block in the form of a plate and a second dielectric block in the form of a prism, which causes the refractive index to become discontinuous. In order to prevent the discontinuity it is necessary that the two dielectric blocks be united through an index-matching solution. However, the process of uniting the two dielectric blocks is fairly difficult, which makes the conventional surface plasmon resonance measuring apparatus difficult to handle in making a measurement. Additionally, conventional surface plasmon measuring apparatuses will potentially have a detrimental influence on the environment because of the index-matching solution being used therein. (See specification page 4, lines 11-26 & page 5, lines 1-15).

Like the conventional surface plasmon resonance measuring apparatuses, the “optical sensor device” disclosed in Batchelder, (See Figure 1 of Batchelder) utilizes “index matching”

fluid (13)² to fill an “airgap between a [glass microscope slide or cover slip (12)]” (i.e., first dielectric block) and [a transparent] prism (11)” (i.e., second dielectric block). (Col. 2, lines 19-26) (emphasis added). Since the “optical sensor device” employs “index matching fluid” to unite the glass microscope slide or cover slip (12) with the transparent prism (11), the “optical sensor device” disclosed in Batchelder does not remedy the problems caused by index-matching solution. Given that Batchelder requires index matching fluid (13) disposed between two dielectric blocks (i.e., transparent prism (11) and glass microscope slide or cover slip (12)), Batchelder specifically teaches away from the surface plasmon resonance measuring chip recited in claim 1, which does not require two dielectric blocks and index matching fluid. In other words, Batchelder fails to teach or suggest a surface plasma resonance measuring chip, comprising, *inter alia*, a dielectric block wherein said dielectric block is formed *as a single block* that includes an entrance surface which said light beam enters, an exit surface from which said light beam emerges, and a surface on which said metal film is formed, said *metal film is united with said dielectric block*, as required by claim 1. Moreover, in view of the problems caused by “index-matching solution,” Applicant submits that one skilled in art would not combine aspects of Batchelder and Natsuume to arrive at the features of claim 1.

Second, Applicant submits that there simply is no disclosure or suggestion in Natsuume and the Examiner cites to none suggesting or teaching the effects of a light beam striking a surface of the polyolefin polymer, Zeonex such that *the intensity of an s-polarized component at*

² See Col. 2, lines 24-26 of Batchelder describing that “where the prism (11) is of glass [Batchelder employs] glycerol (n=1.47) as the index matching fluid.”

an interface is 50% or less of the intensity of the light beam at the interface, as required by claim

1. The Examiner has simply not provided motivation known in the art to modify the combination of Batchelder and Natsuume in the manner suggested by the Examiner. The only teaching comes from Applicant's own disclosure, which is not proper according to *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

For at least the reasons submitted above, Applicant submits that the Examiner's rationale to combine Batchelder and Natsuume are deficient. Applicant therefore respectfully requests the Examiner to reconsider and withdraw the § 103(a) rejection of claim 1.

With further regard to the Examiner's § 103(a) rejections of claims 2-12, Applicant submits that claims 2-12 are patentable for at least the reasons submitted for claim 1 and because Natsuume fails to make up for the deficiencies of Batchelder.

Regarding the Examiner's § 103(a) rejection of claims 4-6, Applicant submits that claims 4-6 are independently patentable because Batchelder, Natsuume, or a combination thereof fails to teach, suggest or provide the motivation for a surface plasmon resonance measuring chip, comprising a dielectric block formed of a synthetic resin wherein said synthetic resin is a synthetic resin that is selected from polymethylmethacrylate, a cycloolefin polymer, or a cycloolefin copolymer, as required by claims 4-6. In the Office Action, the Examiner correctly concedes that Batchelder does not teach using a synthetic resin in the transparent prism (11) disclosed therein. However, the Examiner suggests that substituting the polyolefin polymer (Zeonex), disclosed by Natsuume, in the transparent prism (11) taught by Batchelder makes up for the deficiencies of Batchelder. Assuming *arguendo*, that the polyolefin polymer (Zeonex)

disclosed by Natsuume could be substituted in the transparent prism (11) taught by Batchelder, the Examiner has not shown how such a combination provides motivation for a surface plasmon resonance measuring chip, comprising a dielectric block formed of a synthetic resin wherein said synthetic resin is a synthetic resin that is selected from *polymethylmethacrylate, a cycloolefin polymer, or a cycloolefin copolymer*, as required by claims 4-6.

Since neither Batchelder, Natsuume, nor any combination thereof teaches all of the limitations of claims 4-6, the Examiner's rejection of claims 4-6 as being obvious should be reconsidered and withdrawn.

Concerning claims 7-12, Applicant notes that the Examiner failed to provide any bases for the § 103(a) rejections of claims 7-12 within the Office Action. Therefore, Applicant submits that if the Examiner intends to maintain the § 103(a) rejection of claims 7-12 in any future action, he or she is requested to provide explicit bases for the rejection on the record.

V. New Claims

Applicant has added new claims 14-21 in order to more fully cover various aspects of Applicant's invention as disclosed in the specification. In addition to their dependencies from claim 1, Applicant respectfully submits that claims 14-21 should be allowable because the cited prior art does not teach or suggest the limitations of these claims. The new claims 14-21 are readable on elected Group I.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


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